MESSENGERS FROM SPACE: NOTES FROM THE NATURAL HISTORY MUSEUM FOR TEACHERS. Monica M. Grady and J. C. Bridges, Dept. of Mineralogy, The Natural History Museum, Cromwell Road, London SW7 5BD, UK. (M.Grady@nhm.ac.uk; J.Bridges@nhm.ac.uk).

For several years, the Natural History Museum (NHM), through the Particle Physics and Astronomy Research Council (PPARC), has been running a scheme whereby cases containing meteorite specimens could be borrowed (at no cost) by schools and universities, to illustrate the significance of meteorites and their diversity [1]. The scheme is very successful, and greatly appreciated, as indicated by comments received from schools and students. However, it was perceived that the teaching package could be made more useful by expanding the accompanying teaching notes. A programme to do this was funded by the PPARC and undertaken by the NHM. The new teaching notes are a set of 24 lecture slides, with accompanying explanatory text and suggestions for follow-up projects. The slides can be used independently or as a supplement to the original packages of hand specimens.

The slide set explores the nature of meteorites, from their formation at the birth of the Solar System to their final resting place on Earth. It highlights some of the different types of meteorites: the most primitive carbonaceous chondrites, rich in water and organic molecules and which contain interstellar grains produced in the out-flowing wind of ancient stars; the dense iron meteorites, some of which are the nearest accessible analogues to the Earth's core, and the group of igneous martian meteorites that have helped to unlock the secrets of the martian surface.

The slide set and notes are aimed at students aged between 11 and 16, *i.e.*, those studying at Key Stages 3 and 4 of the National Curriculum of England and Wales. The notes are specifically designed to enable teachers to deliver Section 4 of the "Physical Processes, the Earth and Beyond" segment of the Science complement, the section that addresses the Earth's place in space and its relationship with other celestial bodies.

The package opens with a short introduction for teachers, explaining the aims of the notes, and outlining the objectives to be addressed. These can broadly be summarised as achieving an understanding of the significance of meteorites as natural parts of the Solar System, their diversity in composition and appearance, the great age of most meteorites compared to rocks on Earth and the rôle of meteorites in unravelling the history of the Solar System, in addition to the excitement and wonder of the beauty and diversity of Nature.

Following the introduction for teachers is a set of 24 lecture slides, illustrating the theme "Meteorites: Messengers from Space". The slide set includes pictures of specimens from the NHM's meteorite collection, plus images taken by the Hubble Space Telescope (HST) and other graphics from NASA's public domain library. Accompanying the slides are

notes, describing each image and outlining its significance. The notes are arranged in sections covering various aspects of the study of meteorites: (1) General introduction; (2) How big is a meteorite and how often do they fall? (3) Where do meteorites come from? (4) What are meteorites made from? (5) What can we learn from meteorites? Each section is illustrated by full-colour thumbnail-sized images of the slide referred to in the text, thus enabling a teacher or tutor to give a lecture on meteorites.

Following the main body of the text is a list of web addresses (including NASA, SEDS and LANL, in addition to that of the NHM), for which additional information and images can be drawn. There is also a glossary to expand on the specialist terms used in the text. The package is completed by two projects that could be followed up as extension activities connected to "The Earth and Beyond" segment of the National Curriculum. The projects are designed to reinforce the importance of meteorites for the Earth's history, their relevance to people, the chance of one falling and risks associated with meteorite falls. Resources in the form of newspaper articles, maps and diagrams accompany the follow-up projects, all of which are in black and white and may be copied freely.

All the pages of text are encapsulated in plastic envelopes for increased durability on handling, and a feed-back form included for comments for teachers and students. Several forms have been received so far, all of which have been complimentary. The slide set and notes package can be used as an accompaniment to the hand specimen package previously distributed [1]. However, the slide-set package can also usefully be used independently of the hand specimens. Indeed, ten sets of slides and notes were provided to the PPARC, four of which accompany the meteorite hand specimen packages, and the remainder of which stand alone.

The next phase of the meteorite teaching package enhancement programme will be to transfer the slides and notes to CD-ROM, to produce a cross-platform multi-media package that students might use independently of teaching staff. Numerous additional images will be included on the CD-ROM, as will extra follow-up projects and associated resources. The production of this CD-ROM will rely heavily on images and movies available free of copyright from the WWW (although full acknowledgement of image sources will be given), and is also dependent on additional funding from the PPARC, which will be sought later in 1997.

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Reference: [1] Grady M. M. and Hutchison R. (1996) *Lunar Planet. Sci. Conf.* **XXVII**, 435-436.